

In claim 6, lines 1 & 2, delete "or claim 5"

In claim 7, lines 1 & 2, delete "any one of claims 2 to 6" and insert--claim 2--

In claim 8, lines 1 & 2, delete "any one of claims 2 to 6" and insert--claim 2--

In claim 11, lines 1 & 2, delete "or claim 10"

In claim 13, lines 1 & 2, delete "any one of claims 9 to 12" and insert--claim 9--

In claim 14, lines 1 & 2, delete "any one of claims 10 to 12" and insert--claim 10--

In claim 15, lines 1 & 2, delete "any one of claims 1 to 14" and insert--claim 1--

In claim 17, lines 1 & 2, delete "any one of claims 1 to 16" and insert--claim 1--

In claim 18, lines 1 & 2, delete "any one of claims 1 to 17" and insert--claim 9--

In claim 20, lines 5 & 6, delete "any one of the claims 1 to 7 and 9 to 19" and insert  
--claim 1--

In claim 26, line 1, delete "or claim 25"

In claim 27, line 1, delete "any one of claims 24 to 26" and insert--claim 24--

In claim 28, line 3, delete "any one of claims 20 to 23" and insert--claim 20--

In claim 29, line 3, delete "any one of claims 20 to 23" and insert--claim 20--

In claim 30, lines 6 & 7, delete "any one of the claims 1 to 8 and 15 to 19" and insert  
--claim 1--

Please add the following new claims:

32. (New) A process for producing or acquiring from a substance (1) signals, particularly electrical signals, characteristic of the biological and or chemical activity or of the biological and or chemical behaviour of said substance or of an active element contained in said substance;

said process including the stages:

- of placing said substance in a zone (13) subjected to an excitation field of an electrical, magnetic and/or electromagnetic type (15, 17); said excitation field being produced by an excitation signal having particularly a frequency between 20 Hz and 20 000 Hz;

- of converting the fields resulting from the interaction of the excitation field and the substance, into signals, particularly electrical signals, by means of a first transducer or acquisition sensor (5) receiving said resulting fields,

(said signals are characteristic of the biological and/or chemical activity or of the biological and/or chemical behaviour of said substance or said active element contained in said substance).

33. (New) A process according to claim 32, the characteristic of said excitation signal being that it has a uniform spectral power, of the white noise type.

34. (New) A process according to ~~any one of claims~~ 32, such that:

- the zone subjected to the excitation field is isolated (13) from the parasitic fields coming from the environment.

*claim 32*  
35. (New) A process according to ~~any one of claims~~ 32, further including the stage:

- of applying said signals coming from said first transducer (5), by means of a second transducer (51), to a biological receptor system,

(in such a way that the biological and/or chemical activity or the biological and/or chemical behaviour of the biological receptor system will be modified in accordance with the nature of the biological and/or chemical activity or the biological and/or chemical behaviour of said substance).

36. (New) A system for producing or acquiring signals, particularly electrical signals, characteristic of the biological and/or chemical activity or of the biological and/or chemical

behaviour of a substance (1) or of an active element contained in said substance and a system for implementing the properties of such signals;

said system including:

- an emitter (15, 17) generating an excitation field of an electrical, magnetic and or electromagnetic type in a zone (13) where said substance is located; said emitter being excited by an excitation signal having particularly a frequency between 20 Hz and 20 000 Hz;

- a first transducer or acquisition sensor (5) receiving fields resulting from the interaction of said excitation field and said substance, said first transducer converting said resulting fields into signals, particularly electrical signals,

(said signals are characteristic of the biological and/or chemical activity or of the biological and/or chemical behaviour of said substance or said active element contained in said substance).

- emission means particularly a coil (51) for applying said signals coming from said first transducer to a biological receptor system,

(in such a way that the biological and/or chemical activity or the biological and/or chemical behaviour of the biological receptor system will be modified in accordance with the nature of the biological and/or chemical activity or the biological and/or chemical behaviour of said substance).

37. (New) A system according to claim 36, the characteristic of said excitation signal being that it has a uniform spectral power.

38. (New) A system according to <sup>claim 36</sup> ~~any one of the claims 36~~, such that it further comprises:

- shielding means (13) to isolate said zone from the parasitic fields coming from the environment.

39. (New) A device for producing or acquiring signals, particularly electrical signals, characteristic of the biological and or chemical activity or of the biological and or chemical behaviour of a substance or of an active element contained in said substance;

said device including:

- an emitter (15, 17) generating an excitation field of an electrical, magnetic and/or electromagnetic type in a zone (13) where said substance is located; said emitter being excited by an excitation signal having particularly a frequency between 20 Hz and 20 000 Hz;

- a first transducer or acquisition sensor (5) receiving fields resulting from the interaction of said excitation field and said substance, said first transducer converting said resulting fields into signals, particularly electrical signals,

(said signals are characteristic of the biological and/or chemical activity or of the biological and/or chemical behaviour of said substance or said active element contained in said substance).

40. (New) A device according to claim 39, the characteristic of said excitation signal being that it has a uniform spectral power.

41. (New) A device according to claim 39, such that it further comprises:

- shielding means (13) to isolate said zone from the parasitic fields coming from the environment.

42. (New) An amplification process of a reaction between the two elements of a ligand-receptor pair, characterised in that it includes:

- bringing into contact the two elements of a ligand-receptor pair in conditions suitable to allow their reaction, and

- previously, simultaneously or subsequently to this bringing into contact, the application to one and/or the other of these elements of an electromagnetic signal, obtained from an electrical signal

produced by a sensor placed in front of one and or the other of the two elements of the ligand-receptor pair; said electromagnetic signal being hereinafter designated the electromagnetic signal characteristic of the biological activity of one and or the other of the two elements of a ligand-receptor pair.

43. (New) An amplification process according to claim 42, characterised in that the reaction between the ligand and the receptor is obtained by bringing into contact two reagents containing respectively the ligand and the receptor, and, to one and or the other of these reagents, is applied an electromagnetic test signal suspected to include the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of a ligand-receptor pair.

44. (New) An amplification process according to claim 43, characterised in that the application, to one and/or the other of the reagents, of the electromagnetic test signal is made by exposure of a solution or a suspension containing one or other of these reagents to this electromagnetic signal.

45. (New) An amplification process according to claim 43, characterised in that the application, to one and/or the other of the reagents, of the electromagnetic test signal is made by dilution of a solution or a suspension including one and/or the other of these reagents, in a solvent having been previously exposed to this electromagnetic signal.

46. (New) An amplification process according to claim 43, characterised in that the application, to one and/or the other of the reagents, of the electromagnetic test signal is made by dissolution or putting into suspension of this reagent or these reagents in a solvent having been previously exposed to this electromagnetic signal.

47. (New) An amplification process according to claim 45, characterised in that the solvent having been previously exposed to the electromagnetic test signal is water or physiological solute.

48. (New) An amplification process according to claim 43, characterised in that the electromagnetic test signal is the electromagnetic signal obtained from an electrical signal produced by a sensor placed in front of an analysis sample suspected to contain the ligand and or the receptor.

49. (New) An amplification process according to claim 43, characterised in that the electromagnetic test signal is the electromagnetic signal radiated by an electromagnetic radiation source.

50. (New) An amplification process according to claim 42, characterised in that the reaction between the ligand and the receptor is made by bringing into contact an analysis sample suspected to contain the ligand and/or the receptor, with a reagent containing either the receptor, or the ligand, and, to this sample and/or to this reagent, is applied the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of the ligand-receptor pair.

51. (New) An amplification process according to claim 50, characterised in that the application, to the analysis sample, of the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of the ligand-receptor pair is made by exposure of this sample to this electromagnetic signal or signals, or by dilution of this sample in a solvent having been previously exposed to said electromagnetic signal or signals.

52. (New) An amplification process according to claim 50, characterised in that the application, to the reagent intended to react with the analysis sample, of the electromagnetic

signal characteristic of the biological activity of one and or the other of the two elements of the ligand-receptor pair is made by exposure of a solution or a suspension containing this reagent to this electromagnetic signal or signals, or by dilution of such a solution or suspension in a solvent having been previously exposed to this electromagnetic signal or signals, or again by dissolution or putting into suspension of this reagent in a solvent having been previously exposed to said electromagnetic signal or signals.

53. (New) An amplification process according to claim 50, characterised in that, to the analysis sample and to the reagent intended to react with it, is applied the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of the ligand-receptor pair, by exposure of a solution or a suspension containing this sample and this reagent to this electromagnetic signal or signals, or by dilution of such a solution or suspension in a solvent having been previously exposed to said electromagnetic signal or signals.

54. (New) An amplification process according to claim 50, characterised in that, to the analysis sample and/or to the reagent intended to react with it, is applied both said electromagnetic signal characteristic of the biological activity of the ligand and said electromagnetic signal characteristic of the biological activity of the receptor.

55. (New) An amplification process according to claim 51, characterised in that the solvent having been previously exposed to the electromagnetic signal or signals is advantageously water or physiological solute.

56. (New) An amplification process according to claim 42, characterised in that it includes an acquisition stage of the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of the ligand-receptor pair.

57. (New) An amplification process according to claim 56, characterised in that it includes a recording and restitution stage of information representative of the electromagnetic signal characteristic of the biological activity of one and or the other of the two elements of the ligand-receptor pair.

58. (New) An amplification process according to claim 42, characterised in that it includes a detection and, possibly, a measurement stage of the complexes resulting from the reaction between the ligand and the receptor.

59. (New) An amplification process according to claim 42, characterised in that the ligand is an antigen or a hapten, whereas the receptor is an antibody or a membranous receptor targeted specifically against this ligand.

60. (New) An amplification process according to claim 59, characterised in that the reaction between the antigen and the antibody or the hapten and the antibody is revealed by agglutination.

61. (New) A process for detecting the presence of a substance corresponding to one of the two elements of a ligand-receptor pair in an analytical sample, characterised in that it includes the implementation of an amplification process according to claim 42.

62. (New) A detection process according to claim 61, characterised in that it includes:

- the bringing into contact of two reagents containing respectively the ligand and the receptor, in conditions suitable to allow their reaction,
- previously, simultaneously or subsequently to this bringing into contact, the application, to one and/or the other of these reagents, of an electromagnetic signal obtained from an electrical signal produced by a sensor placed in front of the analytical sample: said electromagnetic signal being



hereinafter designated the electromagnetic signal characteristic of the biological activity of the analytical sample, and

- the detection and or the measurement of the ligand-receptor complexes formed during the reaction between the two reagents.

63. (New) A detection process according to claim 62, characterised in that the concentrations of the ligand and of the receptor are chosen so as to be sufficient to lead to the obtaining of ligand-receptor complexes detectable in the absence of the application of said electromagnetic signal characteristic of the biological activity of the analytical sample, but lower than the concentrations likely to lead to a saturation of the reaction between this ligand and this receptor.

64. (New) A detection process according to claim 61, characterised in that it includes:

- the bringing into contact of the analytical sample with a reagent containing either the receptor, if the substance sought in the sample is the ligand, or the ligand, if the substance sought in the sample is the receptor, in conditions suitable to allow their reaction,
- previously, simultaneously or subsequently to this bringing into contact, the application, to this sample and/or this reagent, of the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of the ligand-receptor pair, and
- the detection and/or the measurement of the ligand-receptor complexes possibly formed.

65. (New) A device for detecting the presence of a substance corresponding to one of the two elements of a ligand-receptor pair in an analytical sample, characterised in that it implements a process according to claim 61, and in that it comprises:

- a) reception means (47) of the analytical sample and of a reagent containing either the receptor, or the ligand, allowing them to be brought into contact in conditions suitable to allow their reaction;
- b) a source (5, 9, 9', 19) of the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of the ligand-receptor pair;
- c) application means (51) to the sample and/or to the reagent of the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of the ligand-receptor pair delivered by said source (5, 9, 9', 19); and
- d) detection and/or measurement means (53, 55, 57) of the ligand-receptor complexes formed during the reaction between the sample and the reagent.

66. (New) A device for detecting the presence of a substance corresponding to one of the two elements of a ligand-receptor pair in an analytical sample, characterised in that it implements a process according to claim 61, and in that it comprises:

- a) reception means (47) of the analytical sample and of a reagent containing respectively the ligand and the receptor, allowing them to be brought into contact in conditions suitable to allow their reaction;
- b) acquisition means of an electromagnetic signal obtained from an electrical signal produced by a sensor placed in front of the analytical sample; said electromagnetic signal being hereinafter designated the electromagnetic signal characteristic of the biological activity of the analytical sample, and
- c) application means (51) to one and/or the other of the reagents of said electromagnetic signal characteristic of the biological activity of the analytical sample, and

- d) detection and or measurement means (53, 55, 57) of the ligand-receptor complexes formed during the reaction between the two reagents.

67. (New) A device according to claim 65, characterised in that the detection means comprise optical detection means.

68. (New) A device according to claim 65, characterised in that it comprises an enclosure (13) fitted with an electrical and magnetic shielding surrounding said reception means (47).

69. (New) Application of a process for detecting the presence of a substance in an analytical sample according to claim 60 to biological diagnostics in human or veterinary medicine.

70. (New) Application of a process for detecting the presence of a substance in an analytical sample according to claim 61 to bacteriological control in the pharmaceutical industry, the cosmetics industry, food production and industries.

71. (New) A process for detecting the presence, in an electromagnetic test signal, of the electromagnetic signal characteristic of the biological activity of one and/or the other of the two elements of a ligand-receptor pair; characterised in that it includes the implementation of an amplification process according to claim 42.

72. (New) A detection process according to claim 71, characterised in that the electromagnetic signal is the electromagnetic signal radiated by an electromagnetic radiation source.

#### REMARKS

The above preliminary amendment is made to add new claims and remove multiple dependencies from claims 6, 7, 8, 11, 13, 14, 15, 17, 18, 20, 26, 27, 28, 29 and 30.